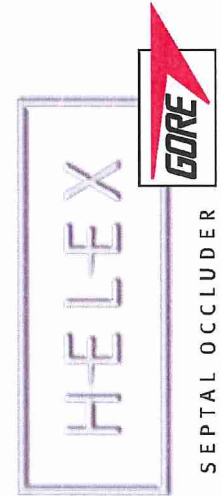
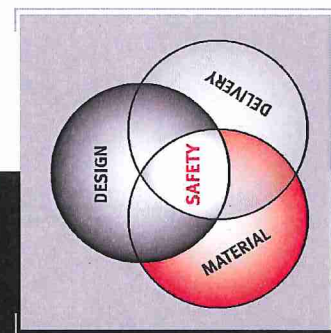
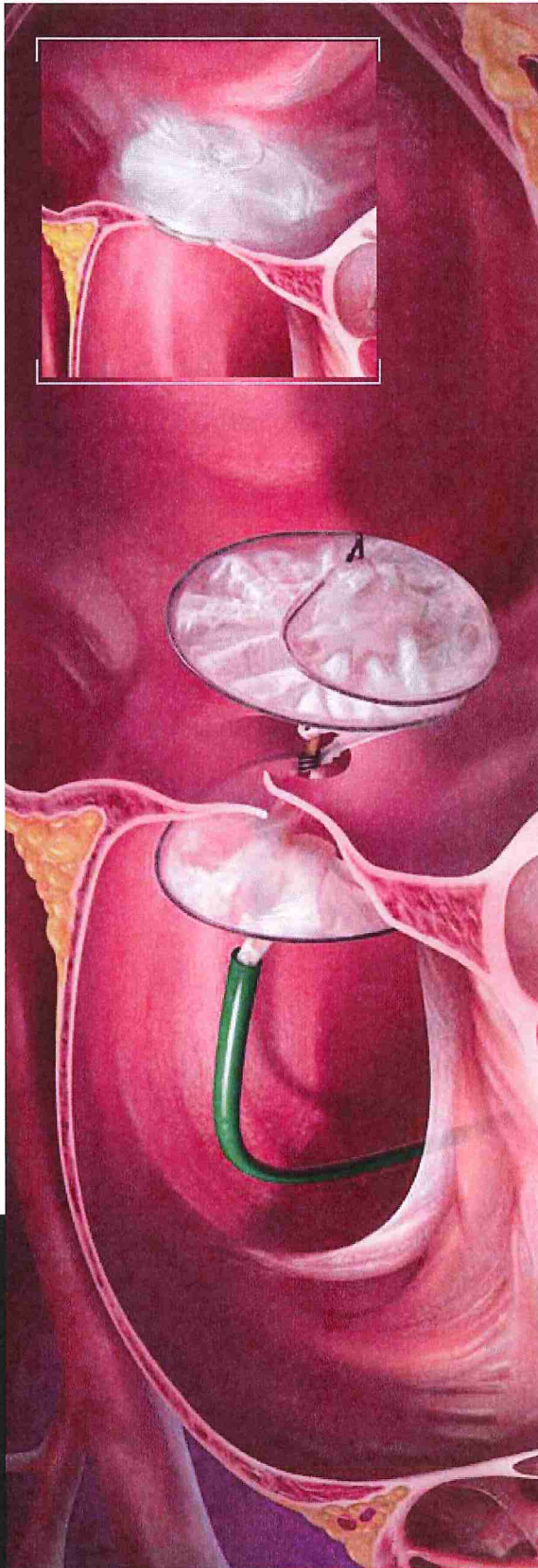
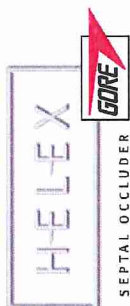
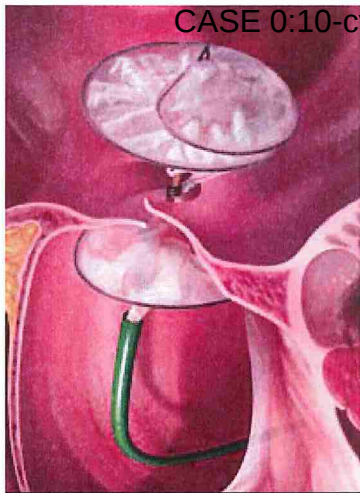


Exhibit 31

Training Manual



WLG00669881



CONTENTS

HISTORY	Page A-1
FEATURES SUMMARY	Page B-1
PRODUCT	Page C-1
The GORE HELEX Septal Occluder	Page C-2
Delivery System	Page C-3
Indications/Contraindications	Page C-9
Equipment Considerations	Page C-10
Choosing the Optimal Size	Page C-11
Patient Considerations	Page C-12
DEPLOYMENT INSTRUCTIONS	Page D-1
Loading/Flushing	Page D-2
Advancing the System to the Defect	Page D-5
Deployment	Page D-6
Left Atrial Disc Deployment	Page D-7
Transition - Left to Right	Page D-9
Right Atrial Disc Deployment	Page D-10
Lock Release	Page D-11
Delivery System Removal	Page D-12
Device Retrieval	Page D-13
Review	Page D-14
TIPS FOR SUCCESS	Page E-1
Repositioning	Page E-2
Emergency Recapture/Embolization	Page E-3
Fluoroscopic Appearance	Page E-4
SELECTED REFERENCES	Page F-1

HISTORY

1995-96 Prototype development

1997-98 Pre-clinical testing

1999 CE marked in June

2000 US Feasibility Study initiated in April

2001 US Pivotal Study initiated in March

2003 US Continued Access Study with hydrophilic-coated ePTFE initiated in May

Special thanks to the following cardiologists for input and guidance in the use of the GORE HELEX Septal Occluder:

Neil Wilson, M.D.

Joseph V. De Giovanni, M.D.

Felix Berger, M.D.

Mario Carminati, M.D.

Peter Ewert, M.D.

John Hess, M.D.

Fernando A. Maymone-Martins, M.D.

Shakeel A. Qureshi, M.D.

Anthony P. Salmon, M.D.

Martin Schneider, M.D.

Horst Sievert, M.D.

Chuck Mullins, M.D.

Lee Benson, M.D.

Philippe Bonhoeffer, M.D.

John Cheatham, M.D.

Robert Vincent, M.D.

Thomas Jones, M.D.

Thomas Fagan, M.D.

Sarah Badran, M.D.

Jonathan Rome, M.D.

Frank Ing, M.D.

Ziad Saba, M.D.

Larry Latson, M.D.

Kak Chen-Chan, M.D.

Michael deMoor, M.D.

Evan Zahn, M.D.

Collin Crowley, M.D.

Thomas Zellers, M.D.

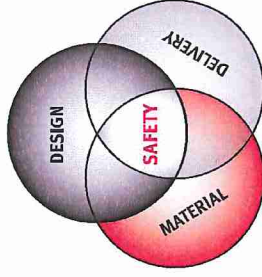
FEATURES SUMMARY

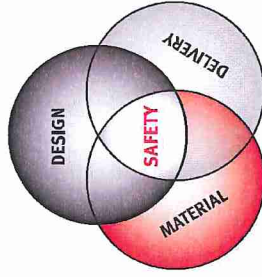
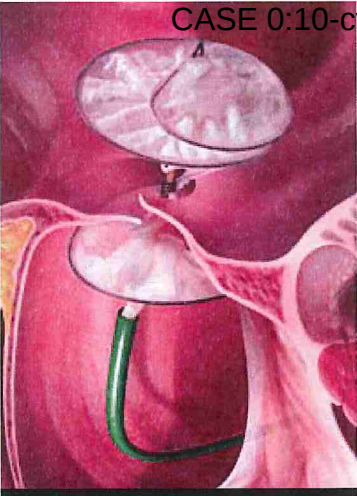
Compliant Septal Occluder Design

- ▶ Circumferential nitinol support frame covered with an ePTFE membrane
- ▶ Conforms to anatomical contours of the septum
- ▶ Lies flat without bulky protrusion into the atria
- ▶ Exceptional wall apposition adapts to natural heart movement
- ▶ Compliant, atraumatic to surrounding cardiac structures, designed to avoid erosion and perforation
- ▶ Allows safe closure of defects with deficient anterosuperior rim

ePTFE Membrane Material

- ▶ ePTFE material performance is proven in over 13 million clinical implants
- ▶ Reduced thrombogenicity
- ▶ Controlled tissue response
- ▶ Biocompatible ePTFE material supports the formation of a functional intimal cell lining
- ▶ Microporous surface allows thin and firm tissue attachment without exuberant tissue formation
- ▶ Thin and strong ePTFE encapsulates the nitinol frame





FEATURES SUMMARY

Complete Delivery System

Sheathless Delivery

- ▶ Simplicity, safety, accuracy
- ▶ Eliminates long transeptal sheaths and the risk of air embolization and perforation
- ▶ Pre-assembled Occluder for easy loading
- ▶ Pre-curved catheter for easy access to target defect
- ▶ Slotted guidewire port facilitates access across difficult multi-fenestrated defects and small PFOs

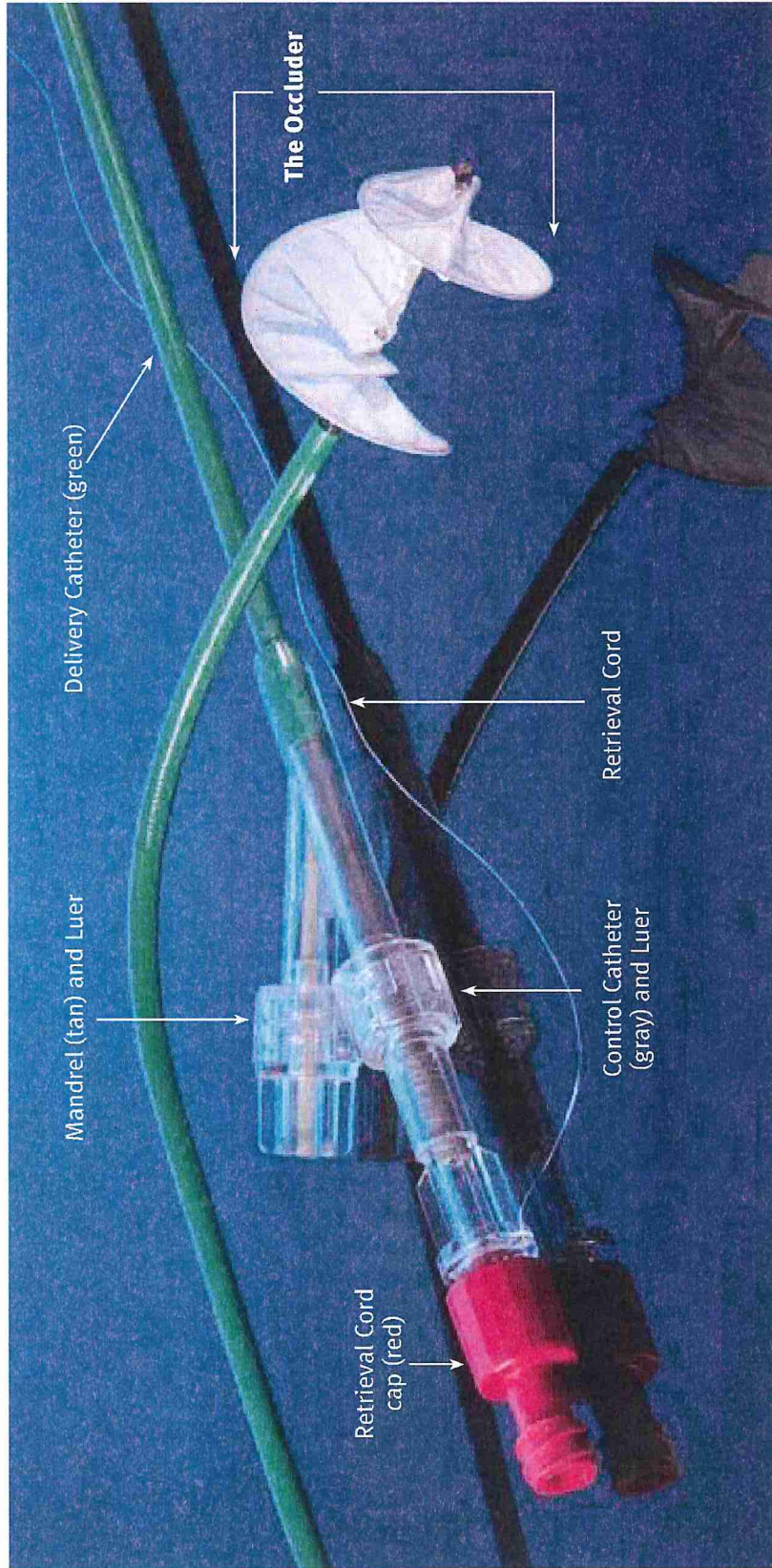
Controlled Repositioning and Retrieval

- ▶ Precise positioning for optimal Occluder placement
- ▶ Unique Retrieval Cord secures device even after lock release
- ▶ No need to compromise positioning or leave behind a suboptimal implant
- ▶ Soft Occluder easily recovered – even after complete release from the delivery system

⚠ Attention,
See Instructions for Use

WLG00669885

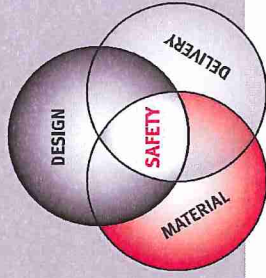
PRODUCT



GORE HELEX Septal Occluder

⚠ Attention,
See Instructions for Use

WLG00669886



The GORE HELEX Septal Occluder

The GORE HELEX Septal Occluder is comprised of two circumferential nitinol support frames covered with an ePTFE membrane designed to conform to the anatomical contours of the septum. The ePTFE material provides a matrix that promotes tissue attachment, improving the security of the Occluder and reducing the potential for residual leakage. The sheathless delivery system eliminates long transseptal sheaths and their inherent risk of air embolization and perforation (Fig. C-1).

The GORE HELEX Septal Occluder is provided in five sizes, ranging from 15 mm to 35 mm, in 5 mm increments (Fig. C-2).

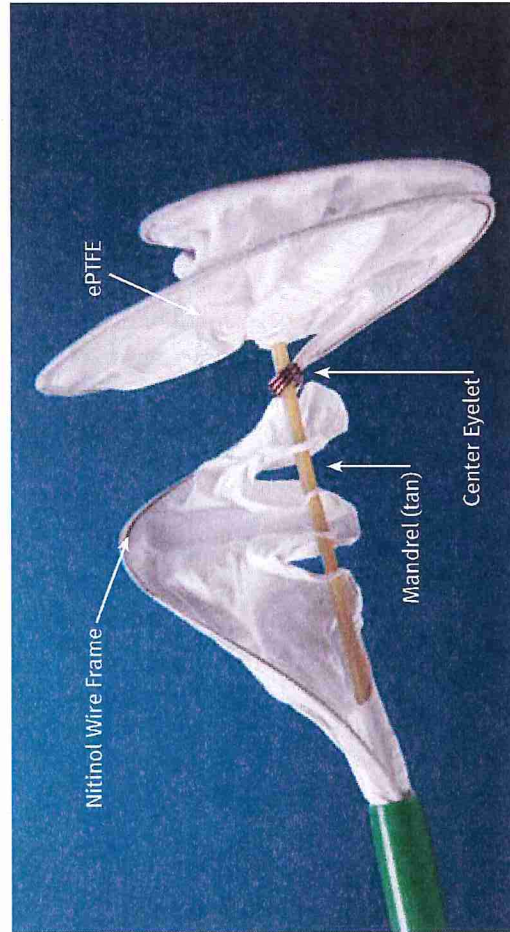


Figure C-1 –Occluder and Mandrel (tan)

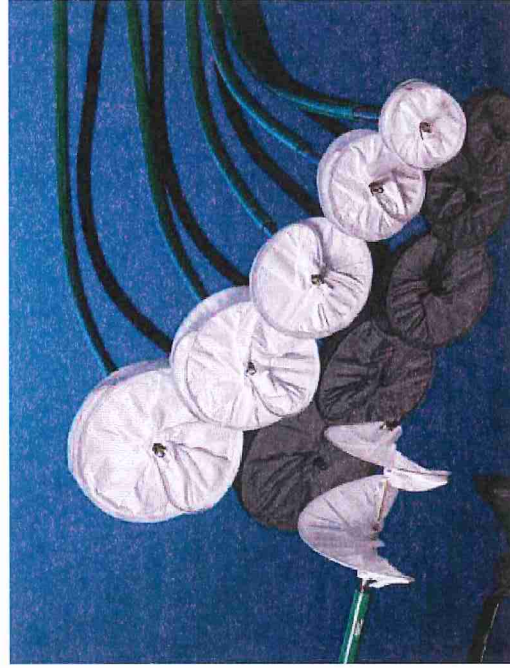
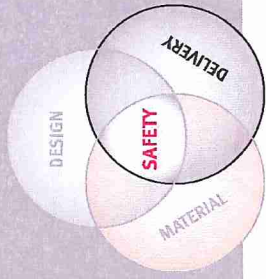


Figure C-2 –Occluder diameters



Delivery System

Y-Arm

The "Y-Arm" of the GORE HELEX Septal Occluder simplifies deployment (Fig. C-3). The Control Catheter (gray) and Mandrel (tan) have only limited movement and must be locked in place at certain steps during device deployment.

At the distal end of the delivery system, the Mandrel (tan) is co-axial within the Delivery Catheter (green) and the Control Catheter (gray) (Fig. C-4). Midway along the delivery system, the Mandrel (tan) bifurcates out at the Control Catheter (gray) lumen, to provide separate control "handles" for the operator.

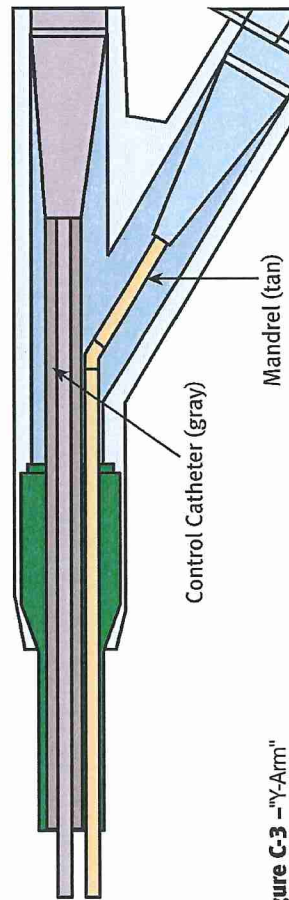


Figure C-3 -"Y-Arm"

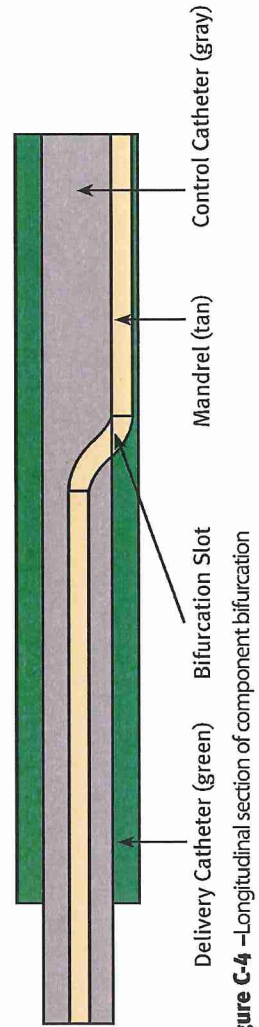
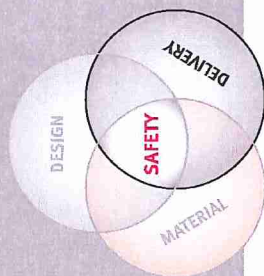


Figure C-4 -Longitudinal section of component bifurcation



⚠ Attention,
See Instructions for Use



Delivery System

Complete delivery system is used for deployment, repositioning and retrieval.

Delivery Catheter (green)

- Contains elongated Occluder
- 10 Fr diameter
- Perforated to allow delivery over 0.035" wire (Fig. C-5)
- Pre-shaped catheter positions the Occluder across the defect (Fig. C-6)
- Working length – 75 cm



Figure C-5 – Guidewire slot with 0.035" guidewire in place

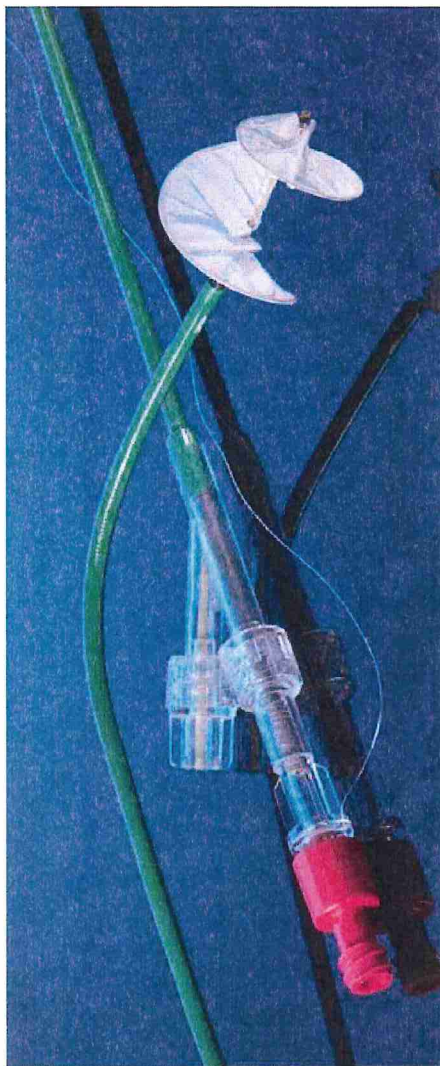
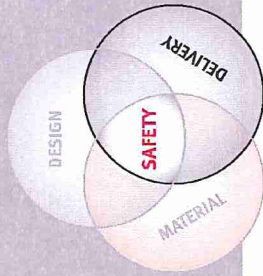


Figure C-6 – GORE HELEX Septal Occluder

⚠ Attention,
See Instructions for Use



Delivery System

Control Catheter (gray)

- Includes Retrieval Cord and Retrieval Cord cap (red) (Fig. C-7)
 - Retrieval Cord holds Occluder to delivery system after lock release (Fig. C-8)
 - Can be used to unlock and retrieve Occluder after lock release if necessary (Fig. C-8)
- "D" shaped catheter and Mandrel (tan) lumen prevents rotation of components (Fig. C-9)
 - Separate Mandrel and Retrieval Cord lumens to prevent entanglement
 - Slotted tip allows lock loop to consistently deploy through the side of the catheter, reducing disc separation during lock release

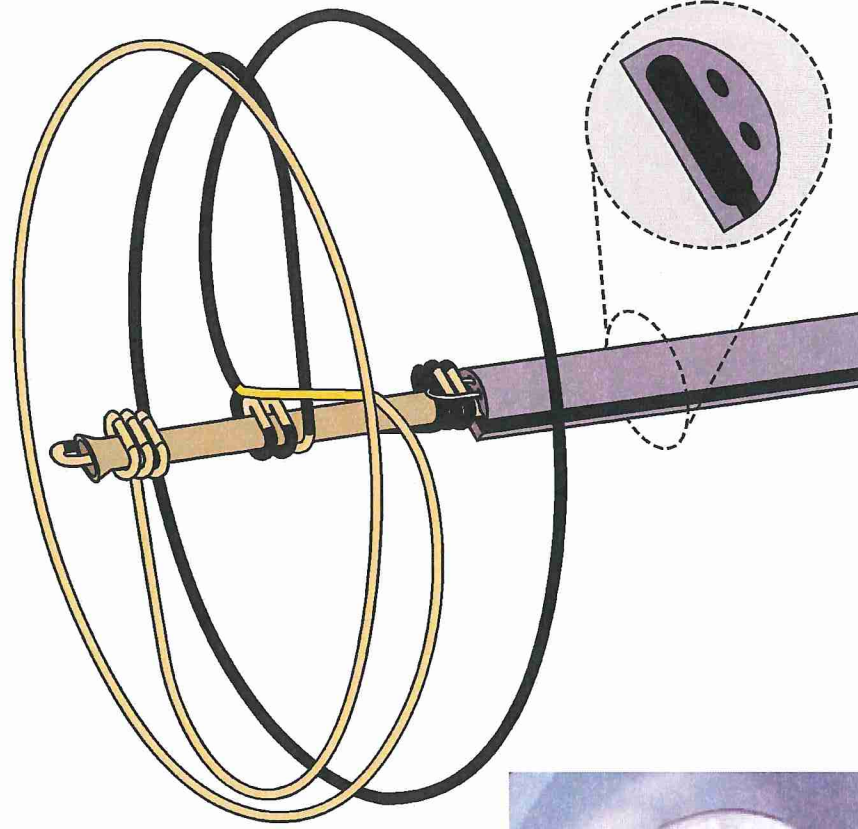


Figure C-9 –Occluder and cross-section of Control Catheter (gray)



Figure C-8 –Retrieval Cord looped through the proximal eyelet

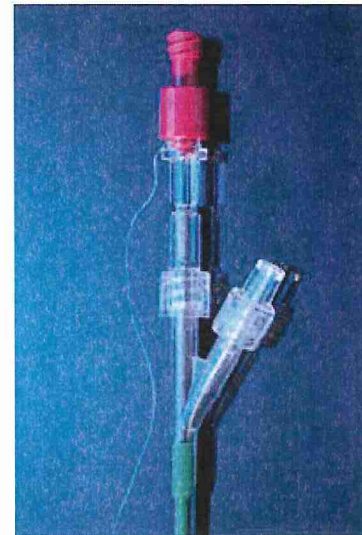
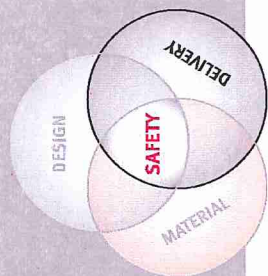


Figure C-7 –Retrieval Cord cap (red) secures end of Retrieval Cord to Control Catheter (gray)

⚠ Attention,
See Instructions for Use



Delivery System

Mandrel (tan)

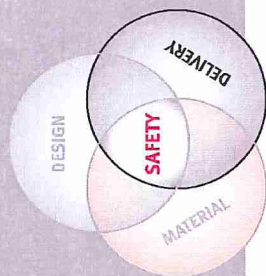
- Controls configuration of the Occluder
- Retains the integral locking mechanism until release
- Pulling gently on the Mandrel (tan) configures the Occluder into a circular shape

During assembly, the three eyelets and the ePTFE membrane perforations are threaded onto the Mandrel (tan). The locking loop is straightened and placed within the lumen of the Mandrel (tan). The Mandrel tip is flared to retain the eyelets until lock release (Fig. C-10).



Figure C-10 –Mandrel (tan) with flared tip

⚠ Attention,
See Instructions for Use



Delivery System

In Figure C-11, the Occluder is shown as it would appear prior to lock release and prior to loading the Occluder into the delivery system. The Retrieval Cord holds the right atrial eyelet of the Occluder to the tip of the Control Catheter (gray). The locking loop is held straight within the Mandrel (tan).

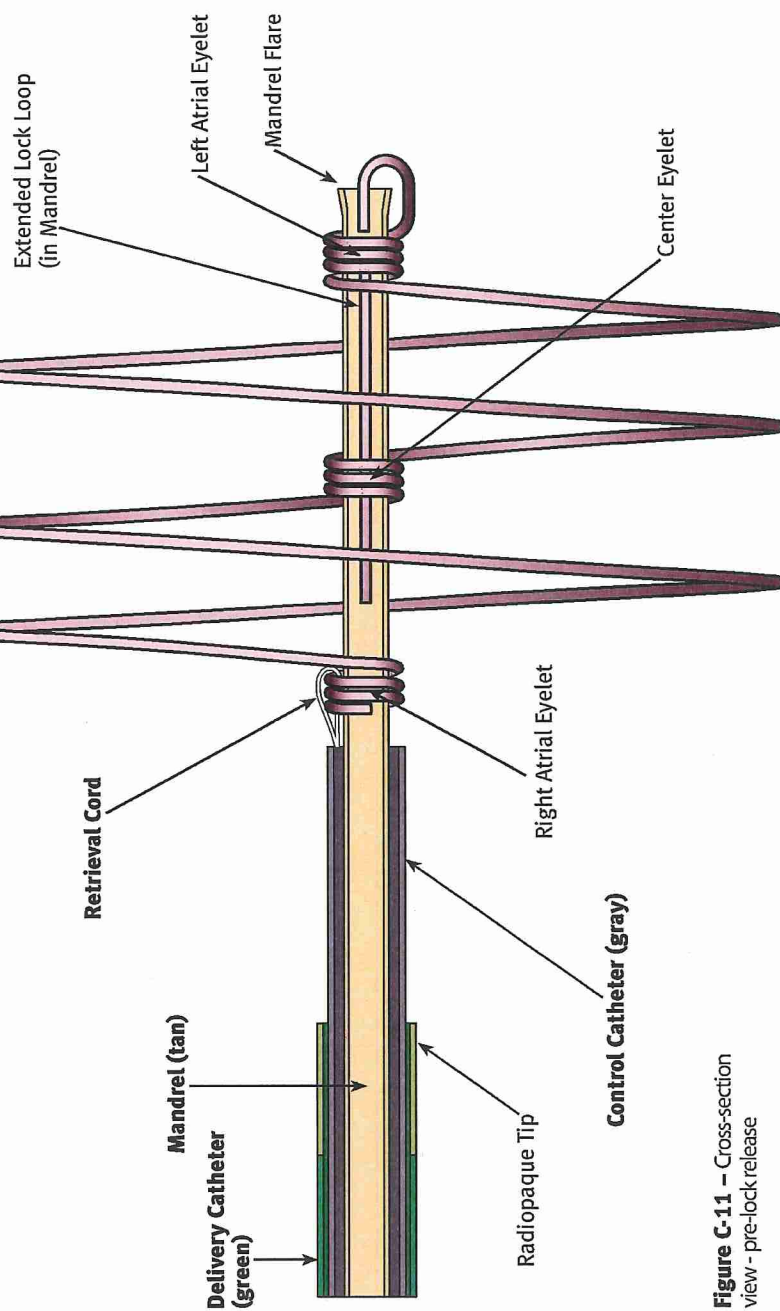
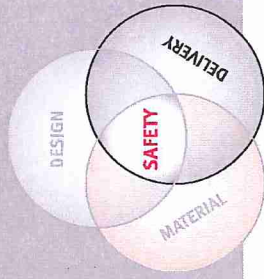


Figure C-11 – Cross-section view - pre-lock release

⚠ Attention,
See Instructions for Use



Delivery System

A firm and quick pull on the Mandrel (tan) luer pulls the Mandrel tip through the three eyelets and allows the locking loop to deploy through the slot in the Control Catheter (gray) (Figs C-11 and C-12).

In Figure C-12, the Occluder is shown following lock release. The three eyelets are held closely together. The Mandrel (tan) has been withdrawn into the Control Catheter (gray), allowing the lock loop to form through the slot at the tip of the Control Catheter (gray).

Once locked, the Occluder is still attached to the tip of the Control Catheter (gray) by the Retrieval Cord.

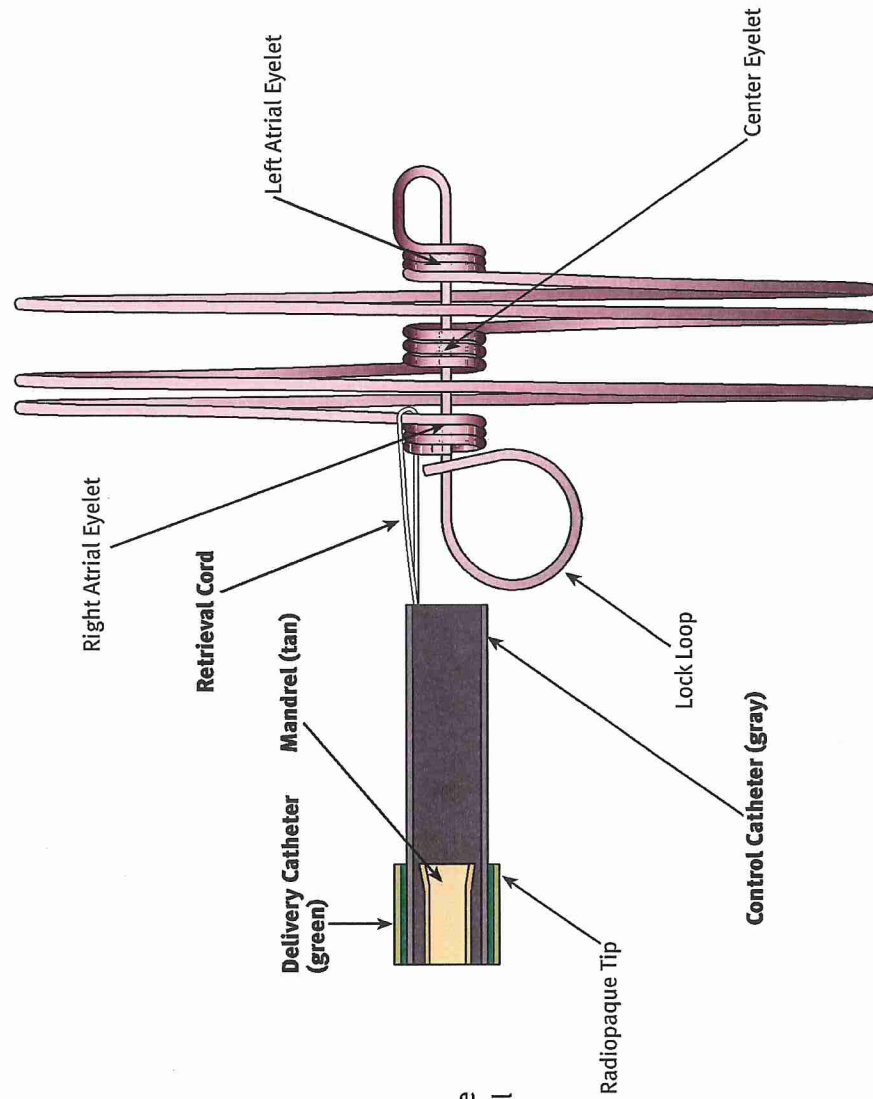
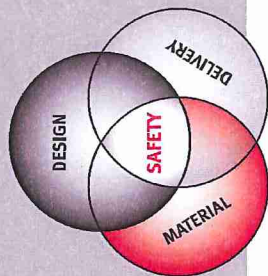


Figure C-12 –Cross-section view - locked



Indications/Contraindications

INDICATIONS/INTENDED USE

The GORE HELEX Septal Occluder is a permanently implanted prosthesis indicated for the transcatheter closure of Atrial Septal Defects (ASDs) within the oval fossa (e.g. Secundum ASD, PFO).

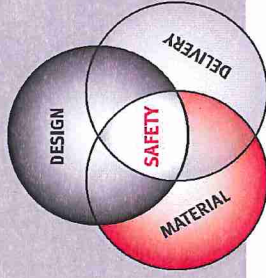
CONTRAINDICATIONS

- The GORE HELEX Septal Occluder is contraindicated for use in patients with a septal wall thickness that would result in Occluder rim spacing of greater than one-half the labeled Occluder diameter.
- Do not use the device in ASDs that are located eccentrically on the septum (e.g., Sinus Venosus ASD and Ostium Primum ASD).
- There must be adequate room in the atrial chamber to allow the right and left atrial discs to lie flat against the atrial septum, without interference with critical cardiac structures. Do not place the device in a position that causes impingement on the mitral valve leaflets, the ostia of the pulmonary veins, coronary sinus, or other critical cardiac features.
- Do not use the GORE HELEX Septal Occluder in patients with the following conditions:
 - sepsis
 - intra-cardiac thrombus
 - venous access vessel thrombus or blockage
 - contraindication to antiplatelet and/or anticoagulation therapy

Footnote:

*Indicated for closure of ASD and PFO in Europe. Clinical trial underway in the U.S., indicated for ASD only.

⚠ Attention,
See Instructions for Use



Equipment Considerations

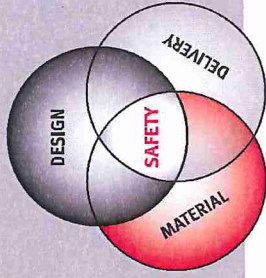
Facilities implanting the GORE HELEX Septal Occluder should have an interventional cardiac catheterization laboratory equipped with:

- High resolution fluoroscopic imaging equipment.
- Transesophageal Echocardiography (TEE) or Intracardiac Echocardiography equipment with color flow doppler capabilities.
- A standard range of catheterization supplies including 10 Fr and larger introducer sheaths, guidewires, and sizing balloons.
- Should the emergency retrieval of an embolized device become necessary, larger, Mullins-type sheaths, snare catheters (35 mm will capture all sizes) or retrieval baskets should be available.

This product is intended for use by physicians experienced with interventional cardiology procedures and trained in the use of the GORE HELEX Septal Occluder.



Attention,
See Instructions for Use



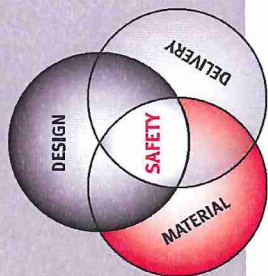
Choosing the Optimal Size

Evaluate the defect and the atrial dimensions using TEE and fluoroscopy.

- Determine defect size using a sizing balloon across the defect. Inflate the balloon until flow stops through the defect as determined by Doppler ultrasound or until the length of the tissue tunnel can be measured.
- Evaluate the defect location and atrial chamber size by TEE, ICE and/or color flow Doppler measurement, confirming that there is adequate space to accommodate the selected Occluder size without impinging on adjacent cardiac structures (e.g., A-V valves, ostia of the pulmonary veins, coronary sinus).
 - There must be adequate room in the atrial chambers to allow the right and left atrial discs to rest flat against the septum with disc spacing equal to the septal thickness.
- The recommended GORE HELEX Septal Occluder size should provide a nominal 2:1 Occluder diameter-to-defect diameter ratio. Deploying the Occluder in cases where the Occluder diameter-to-defect diameter ratio <1.6:1 increases the risk of device embolization. Ensure that adequate rim to retain the Occluder is present around approximately 75% of the defect.
 - An Occluder that pulls through the defect during disc conformation may be too small and should be removed and replaced with a larger size if the chamber dimensions are adequate.

The GORE HELEX Septal Occluder is available in diameters of 15, 20, 25, 30, and 35 mm, allowing closure of defects up to 22 mm.

⚠ Attention,
See Instructions for Use



Patient Considerations

The patient must be able to accommodate a 10 Fr introducer sheath.

Activated Clotting Time (ACT) should be maintained at 2x baseline or greater throughout the procedure.

Standard and accepted post-procedural antiplatelet and antibiotic therapy should be employed.

Refer to the GORE HELEX Septal Occluder Instructions for Use for patient warnings.



DEPLOYMENT INSTRUCTIONS

The following pages describe the deployment of the GORE HELEX Septal Occluder.
Three major points are addressed:

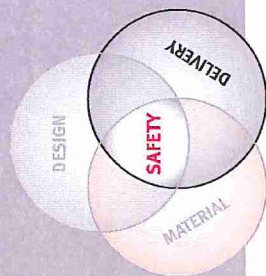
Loading/Flushing

Disc Formation

Lock Release

 Attention,
See Instructions for Use

WLG00669898



[Loading/Flushing

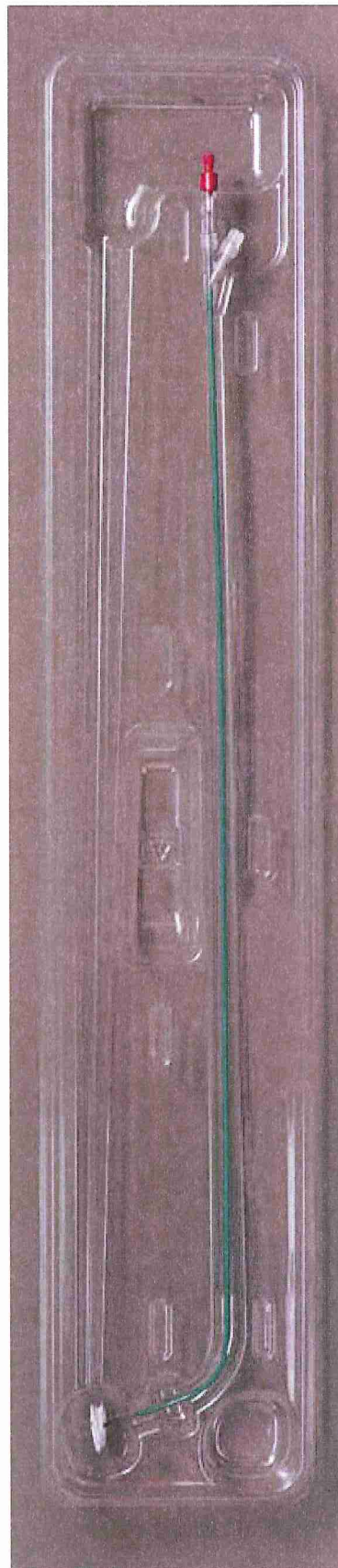


Figure D-1 –The GORE HELEX Septal Occluder Delivery System and Tray

The GORE HELEX Septal Occluder is provided in a sterile package ready to load. Prior to loading, the disc is fully formed and both the Control Catheter (gray) luer and the Mandrel (tan) luer are locked. The Retrieval Cord is held tightly by the Retrieval Cord cap (red) (Fig. D-1).

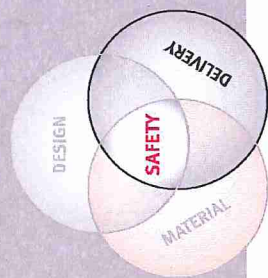
To begin the loading process, submerge the GORE HELEX Septal Occluder in heparinized saline. Keep the delivery system straight during loading.

Fill a syringe (12-50 ml) with heparinized saline, attach it to the Retrieval Cord cap (red) and flush to fill the system.

⚠ Attention,
See Instructions for Use

D-2

WLG00669899



Loading/Flushing

- To begin loading, assure the Mandrel (tan) luer is locked. Grasp the "Y-Arm" and loosen the Control Catheter (gray) luer (Fig. D-2). With the right hand, gently pull (retract) the Control Catheter (gray) (Fig. D-3). The Mandrel hub is locked, holding the Mandrel (tan) in place. The Occluder will be easily drawn into the catheter.

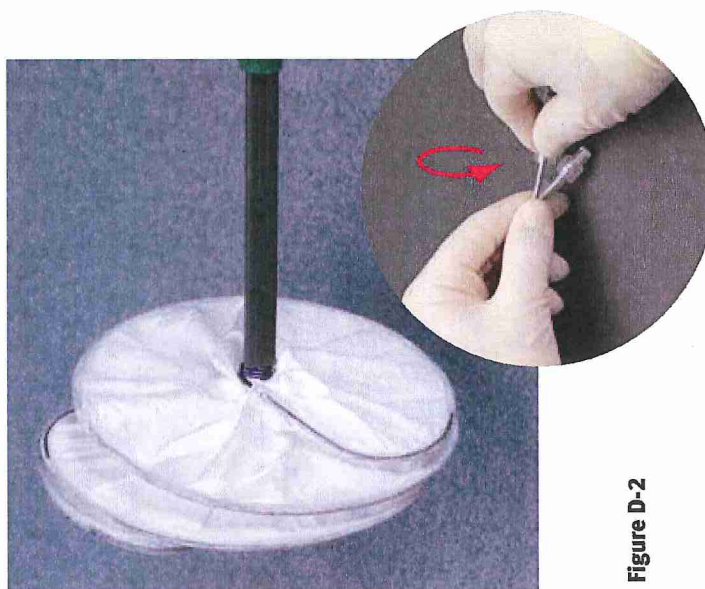


Figure D-2

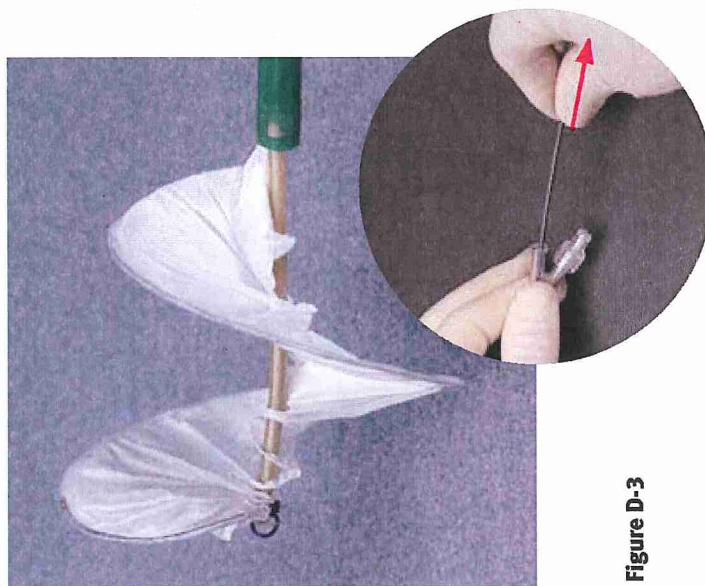
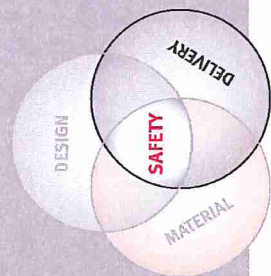


Figure D-3

⚠ Attention,
See Instructions for Use



Loading/Flushing

- Once the Mandrel (tan) tip and Occluder begin to bow, (Fig. D-4), loosen the Mandrel (tan) luer.
- Grasp the Control Catheter (gray) and continue to pull until the entire Occluder is inside the Delivery Catheter (green) (Fig. D-5).
- Once the entire Occluder is loaded into the Delivery Catheter (green), reload the syringe with heparinized saline, and flush vigorously.
- Leave the syringe attached as the delivery system is moved to the table; flush again just prior to inserting the catheter into the sheath.



Figure D-4

⚠ Attention,
See Instructions for Use

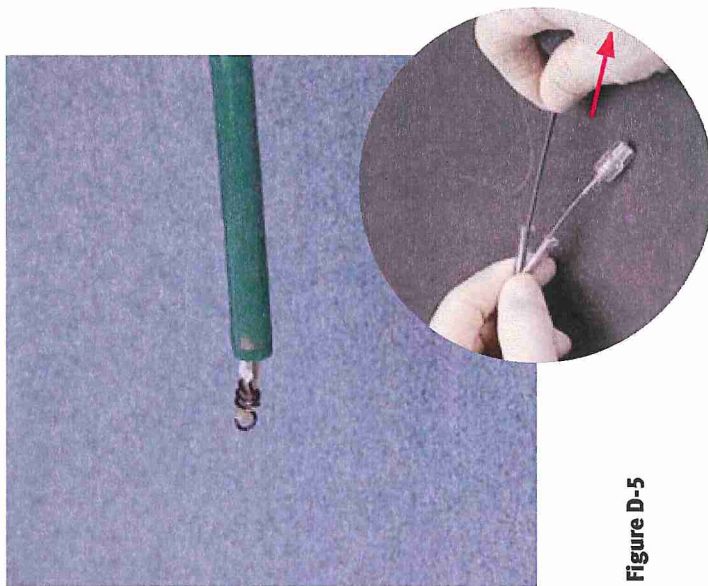
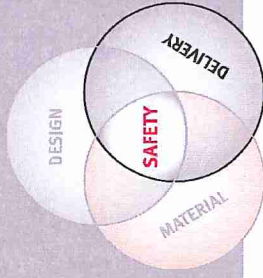


Figure D-5



Advancing the System to the Defect

The GORE HELEX Septal Occluder has been designed as a self-contained delivery system and may be advanced across many defects directly.

Physicians may choose to access the defect with a guidewire or a long sheath in order to select a particular fenestration or save time accessing a small tunnel.

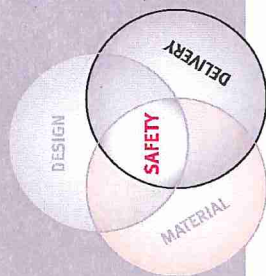
The GORE HELEX Septal Occluder delivery system can be advanced over a wire using the perforation provided. In that case, a larger introducer sheath > 12 Fr must be employed.

If a long sheath is employed, it must be at least 10 Fr and less than 75 cm in length.

⚠ Attention,
See Instructions for Use

D-5

WLG00669902



Deployment

When ready to deploy, confirm by echocardiography that the tip of the catheter is across the defect. The delivery system will appear as in the photo below (Fig. D-7).

- Both luer lockers are unlocked.
- The Control Catheter (gray) is retracted sufficiently to bring the entire Occluder within the Delivery Catheter (green).
- 3 to 4 cm of the Mandrel (tan) is exposed between the luer and hub.

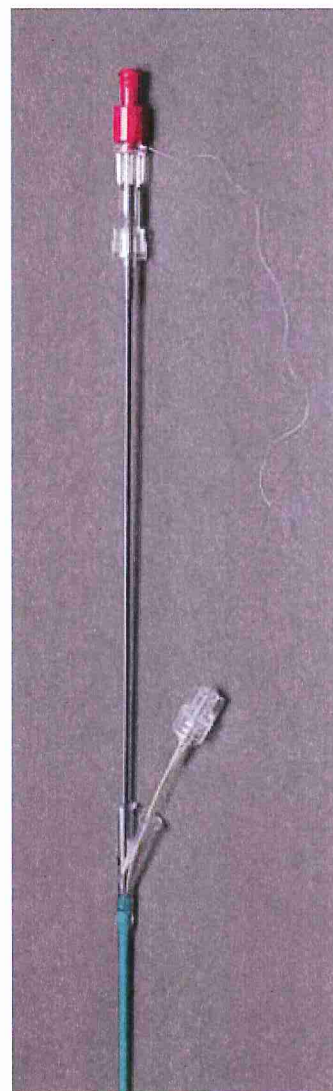
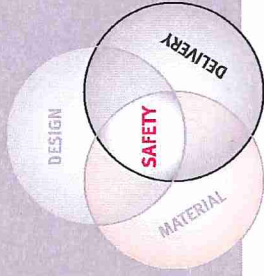


Figure D-7

⚠ Attention,
See Instructions for Use

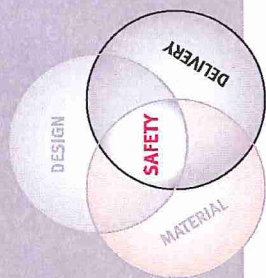


Left Atrial Disc Deployment

To begin deployment of the left atrial disc, grasp the "Y-Arm" in the left hand. All delivery motions of the Occluder should be observed on fluoroscopy with the intra atrial position confirmed by echocardiography.

- Push the Control Catheter (gray) to advance (Fig. D-8a, next page).
 - Notice that the Mandrel (tan) moves as the Control Catheter (gray) is pushed.
- Continue pushing lightly until the Mandrel (tan) luer engages the "Y-Arm".
- Pinch (hold) the Control Catheter (gray) with the left thumb and forefinger to hold Occluder in position (Fig. D-8b, next page).
- Pull the Mandrel (tan) luer gently to form the disc (Fig. D-8c, next page).
 - The operator will feel a light tactile "stopping" sensation.
 - Avoid pulling left atrial eyelet against the Delivery Catheter (green) tip.
- Repeat the "Push/Pinch/Pull" sequence until the left atrial disc is formed to complete the deployment.

⚠ Attention,
See Instructions for Use



Left Atrial Disc Deployment

Push



Figure D-8a

Pinch

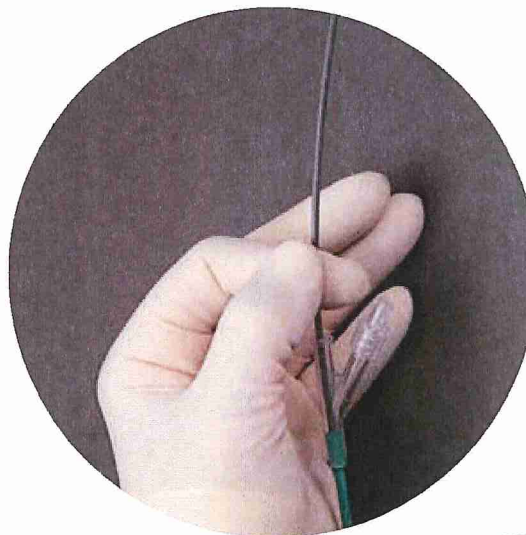


Figure D-8b

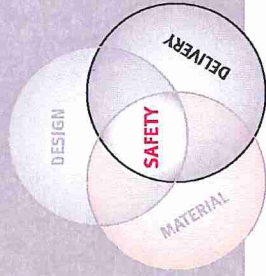
Pull



Figure D-8c

⚠ Attention,
See Instructions for Use

D-8



Transition - Left to Right

Once the central eyelet exits the catheter tip, the operator will prepare to appose the formed left atrial disc against the septum.

- Pull lightly on Mandrel (tan) to flatten left atrial disc (Fig. D-10a).
- Pull entire delivery system gently to appose the left atrial disc to the septum (Fig. D-10b).
 - Confirm contact with the septum on echocardiography.
 - Do not pull firmly against the septum.
- Hold Control Catheter (gray) and pull the Delivery Catheter (green) gently until the "Y-Arm" contacts the Mandrel (tan) luer to prepare for right atrial disc deployment.
- Tighten the Mandrel (tan) luer (Fig. D-10c).



Figure D-10a –Left disc formation complete, formed left disc presented to septum



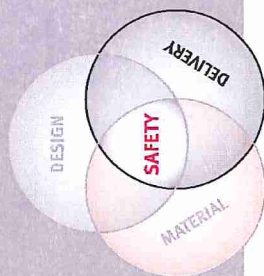
Figure D-10b –Left hand pulls, right hand holds



Figure D-10c – Tighten Mandrel (tan) luer



Attention,
See Instructions for Use



Right Atrial Disc Deployment

To deliver the right atrial disc:

- Hold the Delivery Catheter (green) in the left hand to stabilize the device against the septum.
- Push the Control Catheter (gray) smoothly with the right hand to form the right atrial disc.
- Tighten the Control Catheter (gray) luer.

The Occluder is now fully formed and prepared for lock release.

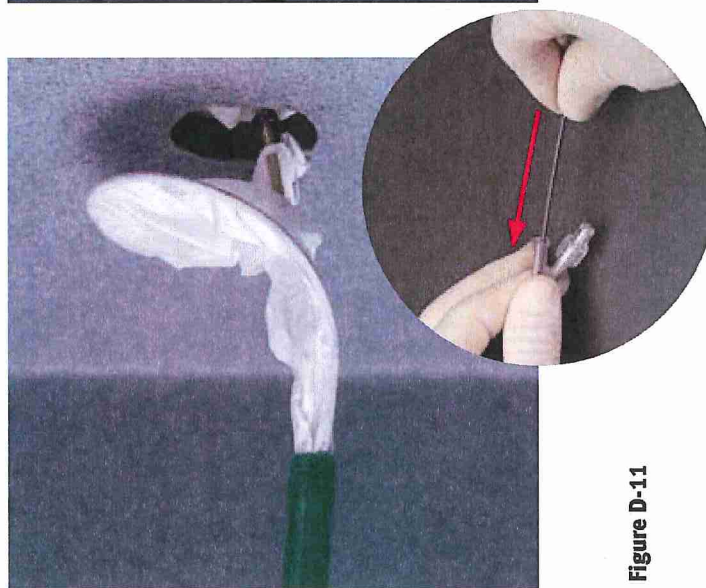


Figure D-11

⚠ Attention,
See Instructions for Use

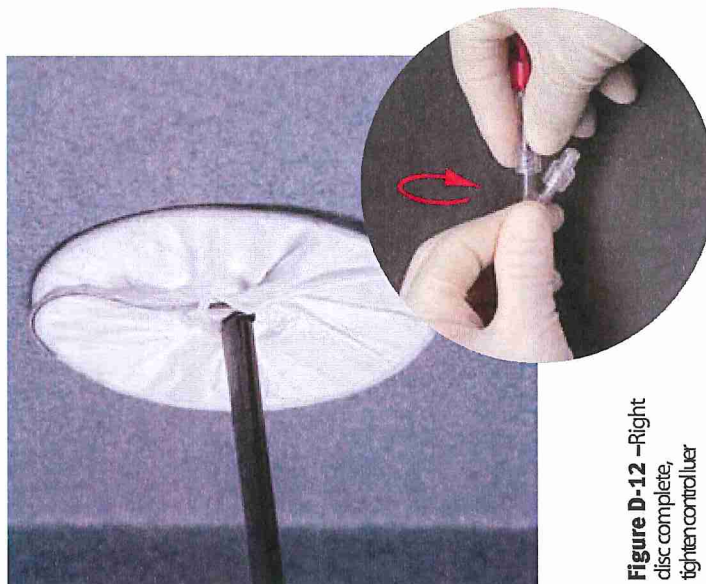
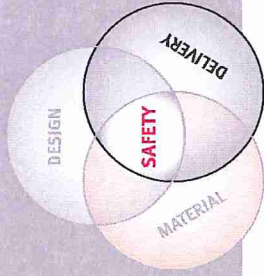


Figure D-12 –Right
disc complete,
tighten control luer



Lock Release

When appropriate, confirm position of the device on echocardiography.

- Remove the Retrieval Cord cap (red) and assure that the retrieval cord is free (Fig. D-13).
- Hold the "Y-Arm" with left hand to prepare for lock release.
- Loosen Mandrel (tan) luer (Fig. D-14).
- Pull the Mandrel (tan) firmly and quickly with right hand to release the lock (Fig. D-15).
- Lock loop deploys through slotted tip while the Occluder is held in position between the tip of the Control Catheter (gray) and the flare on the Mandrel (tan) tip.

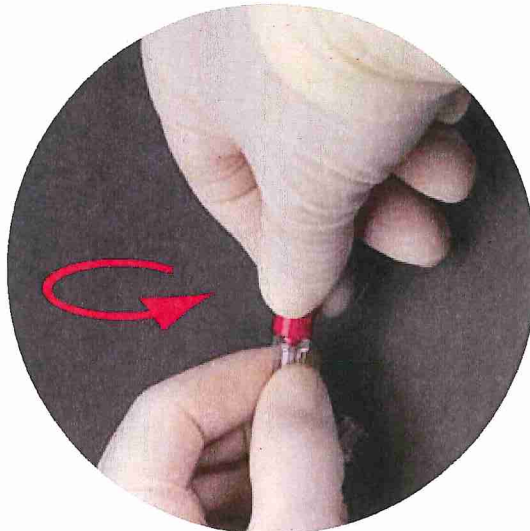


Figure D-13 –Remove Retrieval Cord cap (red)

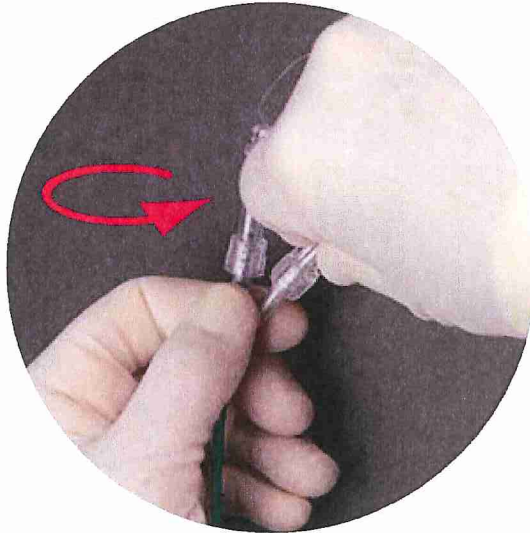


Figure D-14 –Loosen Mandrel (tan) luer

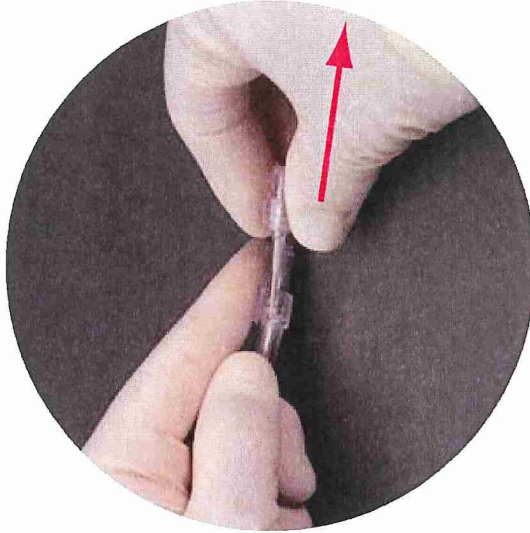
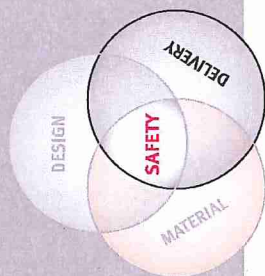


Figure D-15 –Quick, firm pull on the Mandrel (tan) to lock

⚠ Attention,
See Instructions for Use



Delivery System Removal

- When satisfied with Occluder position, the delivery system can be removed.
- Ensure that the Retrieval Cord cap (red) has been removed.
 - Retrieval Cord is free on one end and looped through the right atrial eyelet.
 - Pull entire system until catheter and cord exit the hemostatic valve.
 - Dedicated Retrieval Cord lumen prevents tangling with other components.

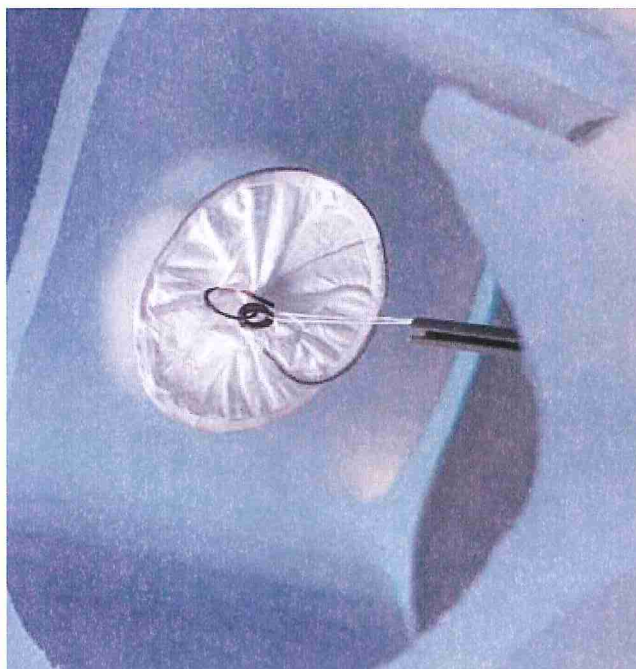
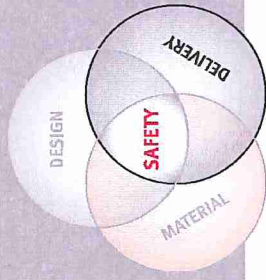


Figure D-16

⚠ Attention,
See Instructions for Use



Device Retrieval

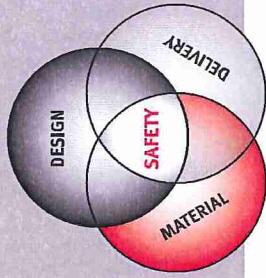
In the event of sub-optimal deployment, the Occluder may be removed.

- Gently pull on Retrieval Cord to bring delivery system back into contact with the Occluder.
- Replace and tighten Retrieval Cord cap (red) to secure the Retrieval Cord.
- Loosen Control Catheter (gray) luer.
- Pull Control Catheter (gray) back into the Delivery Catheter (green).
 - Keep tip of Delivery Catheter (green) away from lock loop.
- Continue to unlock the Occluder until free of the septum.
- Once free, pull entire system to groin and complete removal by pulling through the sheath.

As long as the Occluder remains seated in the septum, the device will unlock and can be drawn into the Delivery Catheter (green). The operator must exercise care that the Delivery Catheter (green) is withdrawn sufficiently to allow the locking loop to fully extend (Figs. E-2 and E-3).

Once the Occluder is free of the septum, the locking loop will present higher resistance and could cause the Retrieval Cord to break. The operator is cautioned to draw the entire Occluder/delivery system assembly back to the introducer sheath before completing device retrieval.





Review

ALWAYS

- Use a light touch
- Move one component at a time
- Lock the Mandrel (tan) luer at completion of left atrial disc
- Lock Control Catheter (gray) luer at completion of right atrial disc
- Make smooth transition from left atrial disc to right atrial disc
 - Appose left atrial disc gently to left septum
 - Hold Control Catheter (gray)
 - Pull Delivery Catheter (green) to prepare for right atrial disc deployment

NEVER

- Pull the left atrial eyelet against the Delivery Catheter (green)
 - Premature lock may result
- Pull the left atrial disc firmly against the septum
 - Premature lock may result
- *Never* . . . push the Mandrel (tan)

⚠ Attention,
See Instructions for Use

D-14

WLG00669911

TIPS FOR SUCCESS

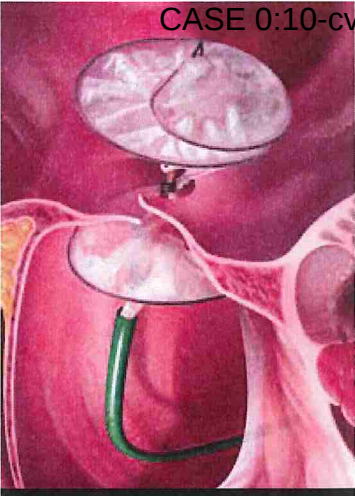
The GORE HELEX Septal Occluder is a compliant device that quickly forms to the shape of the heart, reducing the potential for erosion through delicate tissues. Consequently, the Occluder can be positioned to close some complex defects, such as those with deficient anterosuperior rims.

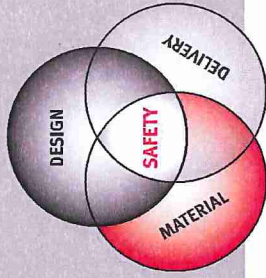
Although the GORE HELEX Septal Occluder is easy to deploy, there is a learning curve associated with achieving successful deployment.

The following sections elaborate on the Occluder design and describe some of the techniques that cardiologists have found useful to improve defect closure and take advantage of the unique characteristics of this device. These discussions will point out some of the more common issues a cardiologist may encounter during early use of the GORE HELEX Septal Occluder.

⚠ Attention,
See Instructions for Use

WLG00669912





Repositioning

The GORE HELEX Septal Occluder can be precisely positioned and repositioned to create optimal Occluder placement. After lock release, the unique retrieval cord secures the device until the position is satisfactory. In most cases, only the right atrial disc must be drawn back into the Delivery Catheter (green) and redeployed to improve device position. Simply keep the Mandrel (tan) luer locked, pull the Control Catheter (gray) to withdraw the Occluder and push the Control Catheter to redeploy.

If the left atrial disc must be brought back into the catheter, the operator may experience higher than normal friction, resulting in premature deployment or Mandrel (tan) kinking. In some fluoroscopic planes, the operator may notice a bend in the locking loop (Fig. E-1). If such a condition should occur, the operator should remove the device from the patient and utilize a new device.

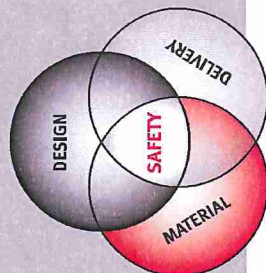


Figure E-1 –Bent locking loop

⚠ Attention,
See Instructions for Use

E2

WLG00669913



Emergency Recapture/Embolization

If at any time the Control Catheter (gray) can be pulled without corresponding movement of the Occluder, either during repositioning or following lock release, the operator should suspect a broken or lost Retrieval Cord. The cause may be simple, such as a loose Retrieval Cord cap (red), or the operator may have exerted more force on the cord than it is designed to handle.

If the device is free of the delivery system, interventional retrieval techniques should be employed (snares, retrieval baskets). In most cases, the Occluder can be unlocked and retrieved using a snare. Use a 10 Fr or larger long sheath, placed close to the device (35 mm) (Figs. E-2 and E-3). Snaring any portion of the device will collapse and unlock the Occluder safely.

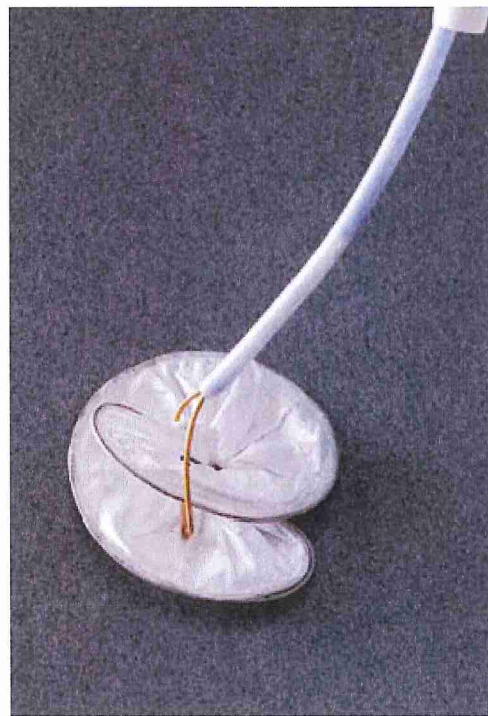
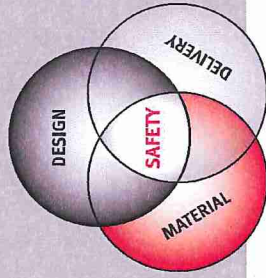


Figure E-2



Figure E-3

⚠ Attention,
See Instructions for Use



Fluoroscopic Appearance

When deployed in a model having uniform dimensions, the Occluder appears planar and parallel (Fig. E-4). Notice that from the center eyelet, the two radial arms are placed on opposite sides of the septum, the lock mechanism is straight as it aligns the eyelets and the lock loop is fully curled, capturing all three eyelets and securely locking the device in place.

Septal anatomy, however, seldom allows the Occluder to take on such a theoretically ideal shape after deployment. Variation in the thickness of the septum and the proximity of the defect to other cardiac structures may cause the two discs to appear distinctly non-parallel (Figs. E-5 thru E-7). Apposition to the septum is more important than fluoroscopic appearance. A successful implant should rest in a planar condition relative to the septum. The position can be confirmed by TEE/TOE or by angio. A right atrial contrast injection with observation of the levophase is used to illustrate left and right septal planes and to confirm that the Occluder is well apposed.

Devices should be removed if:

- An excessive shunt persists
- The disks are not apposed to the septum
- The right atrial eyelet was not captured

Keep in mind that the disc-to-disc spacing usually becomes smaller in the first 30 minutes following deployment as the Occluder "settles" into place and further conforms to the cardiac anatomy.

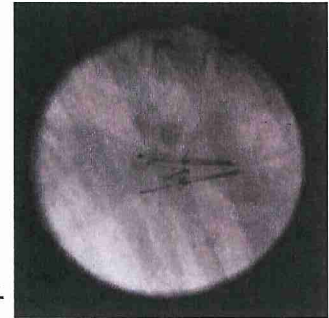


Figure E-5

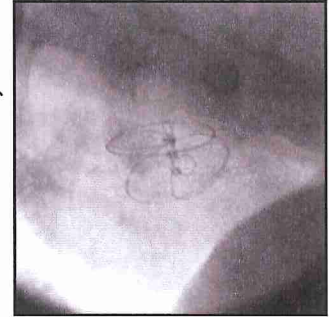


Figure E-6

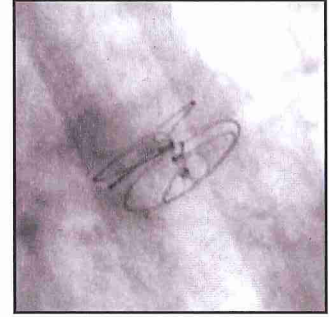


Figure E-7

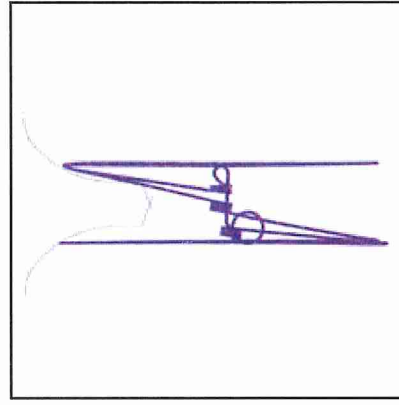
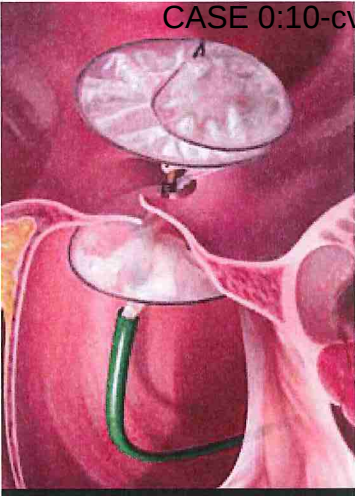


Figure E-4



SELECTED REFERENCES

RP1139 Skowasch D, Peuster M, Andrie R, Tiemann K, Luderitz B, Bauriedel G. Transcatheter PFO closure with a prominent eustachian valve. *Zeitschrift fur Kardiologie* 2004;93(2):162-165.

Peuster M, Beerbaum P. A novel implantation technique for closure of an atypical fenestration connecting the right atrial appendage to an extracardiac conduit by use of a 15 mm Helex device in a patient with total cavopulmonary connection. *Zeitschrift fur Kardiologie* 2004;93(10):818-823.

RP1086 Krumdsorf U, Ostermayer S, Billinger K, Trepels T, Zadan E, Horvath K, Sievert H. Incidence and clinical course of thrombus formation on atrial septal defect and patient foramen ovale closure devices in 1,000 consecutive patients. *Journal of the American College of Cardiology* 2004;43(2):302-309.

RP1072 Lopez L, Ventura R, Welch EM, Nykanen DG, Zahn EM. Echocardiographic considerations during deployment of the Helex Septal Occluder for closure of atrial septal defects. *Cardiology in the Young* 2003;13(3):290-298.

Pedra CA, Pedra SF, Esteves CA, et al. Initial experience in Brazil with the Helex septal occluder for percutaneous occlusion of atrial septal defects. *Arquivos brasileiros de cardiologia* 2003;81:444-452.

RP1008 Dobrolet NC, Iskowitz S, Lopez L, Whalen R, Zahn EM. Sequential implantation of two Helex Septal Occluder devices in a patient with complex atrial septal anatomy. *Catheterization & Cardiovascular Interventions* 2001;54:242-246.

Footnote:

Indicated for closure of ASD and PFO in Europe. Clinical trial underway in the U.S., indicated for ASD only.

⚠ Attention,
See Instructions for Use

SELECTED REFERENCES

RP978 Krumsdorf U, Keppeler P, Horvath K, Zadan E, Schrader R, Sievert H. Catheter closure of atrial septal defects and patent foramen ovale in patients with an atrial septal aneurysm using different devices. *Journal of Interventional Cardiology* 2001;14:49-55.

RP996 Rhodes JF, Dobrolet NC, Lane GK, Mesia CI, Toth AH, Zahn EM, Latson LA. A trial septal defect closure with the HELEX Septal Occluder Device: The FDA Phase I Feasibility Trial. Abstract presented at the 5th Pediatric Interventional Cardiac Symposium (PICS-V). May 22-25, 2001. Toronto, Canada. Catheterization and Cardiovascular Interventions 2001;53(1):147.

RP993 Sievert H. PFO closure in patients with TIA/Stroke. Abstract presented at the 3rd International Workshop on Interventional Pediatric Cardiology. San Donato Milanese (Milan) - Italy. March 29-31, 2001.

RP991 Sievert H, Horvath K, Zadan E, et al. Patent foramen ovale closure in patients with transient ischemia attack/stroke. *Journal of Interventional Cardiology* 2001;14(2):261-266.

RP980 Wilson N. Helex Septal Occluder for closure of atrial septal defects and patent foramen ovale. Abstract presented at the 3rd International Workshop on Interventional Pediatric Cardiology. San Donato Milanese (Milan) - Italy. March 29-31, 2001.

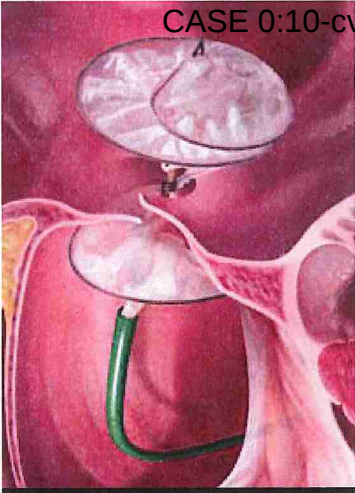
RP999 Zahn EM, Wilson N, Cutright W, Latson LA. Development and testing of the Helex Septal Occluder, a new expanded polytetrafluoroethylene atrial septal defect occlusion system. *Circulation* 2001;104:711-716.

Footnote:

Indicated for closure of ASD and PFO in Europe. Clinical trial underway in the U.S., indicated for ASD only.



Attention,
See Instructions for Use



SELECTED REFERENCES

RP938 Latson LA, Zahn EM, Wilson N. Helex Septal Occluder for closure of atrial septal defects. Current Interventional Cardiology Reports 2000;2:268-273.

Latson LA, Wilson N. A new transcatheter ASD closure device. Transcatheter closure of atrial-septal defects a safe, effective option. Cardiac Consult Magazine 2000;X(3):4.

Richens T, Houston A, Hillis S, Wilson N. Early clinical experience with a novel Nitinol / ePTFE based double disc atrial septal occlusion device (Helex Septal Occluder). Presented at the British Cardiac Society Meeting, May 15-18, 2000.

Sievert H, Richens T, Hillis WS, Houston AB, Macleod K, Wilson N. Early total world experience with a novel Nitinol/ePTFE based double disc atrial septal occlusion device. Poster session. Presented at the European Society of Cardiology. XXII Annual Congress. Amsterdam, The Netherlands. August 26-30, 2000.

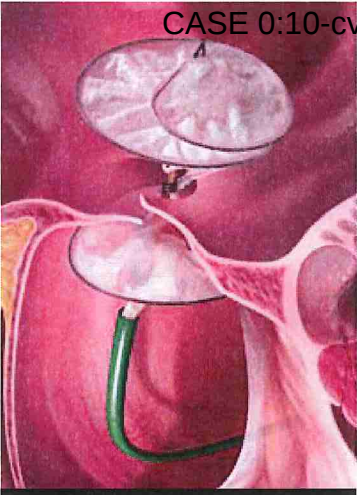
Zahn EM, Latson LA, Wilson N. Acute and long-term follow-up results with the Helex Septal Occluder in an animal model. Presented at the 49th Annual Scientific Session. March 12-15, 2000. Journal of American College of Cardiology 2000;35(2):Supplement:498A.

Zahn EM, Latson LA, Wilson N. Acute and long-term follow-up results with the Helex Septal Occluder in an animal model. Poster session. Presented at the American College of Cardiology. March 12, 2000.

Footnote:

Indicated for closure of ASD and PFO in Europe. Clinical trial underway in the US, indicated for ASD only.

⚠ Attention,
See Instructions for Use



SELECTED REFERENCES

Latson LA, Wilson N. A new transcatheter ASD closure-device. Abstract presented at the 48th Annual Scientific Session. March 7-10, 1999. Journal of American College of Cardiology 1999;33(2) Supplement:520A.

Wilson N, Latson L, Zahn E. A new low profile Nitinol – ePTFE flexible double disc occlusion device. XXXIV Annual General Meeting of the AEPC Sofia. May 19-22, 1999. Cardiology in the Young 1999;9 (Supplement 2):14.

Wilson N, Latson LA, Zahn E. A new low profile Nitinol-ePTFE flexible double disc occlusion device. Presented at British Cardiac Society Meeting. May 25-27, 1999.

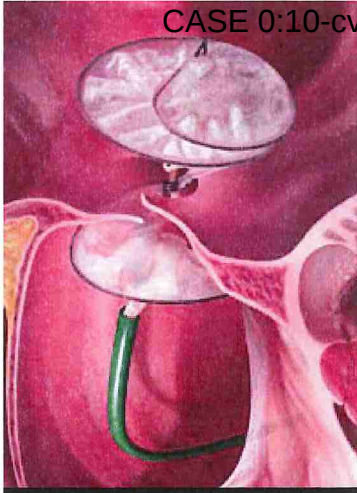
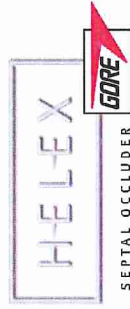
Zahn EM, Cheatham J, Latson LA, Wilson N. Results of in vivo testing of a new Nitinol ePTFE septal occlusion device. Catheterization and Cardiovascular Diagnosis 1999;47:124.

Footnote:

Indicated for closure of ASD and PFO in Europe. Clinical trial underway in the U.S., indicated for ASD only.



Attention,
See Instructions for Use



GORE, HELEX, and designs are trademarks of W. L. Gore & Associates
©2005 W. L. Gore & Associates, Inc. A0199-EN1 OCTOBER 2005

WLG00669919